

The refining of titanium

S/598/62/000/008/003/009
D217/D307

by zone recrystallization. There are 3 figures and 5 tables.

Card 2/2

MIROCHNIKOV, V.S.; REZNICHENKO, V.A.

Separation of metallic titanium from cathode deposits obtained
by the electrolysis of K_2TiF_6 - NaCl - TiO_2 . Titan i ego splavy
no.8:214-219 '62. (MIRA 16:1)
(Titanium--Electrometallurgy) (Electrolytes)

~~REZNICHENKO, Vladlen Alekseyevich; ROPOPORT, Mikhail Borisovich;~~
~~TRACHENKO, Vasilii Andreyevich; DMITROVSKIY, Ye. B., kand. tekhn. nauk,~~
otv. red.; MAKOVSKIY, G. M., red. izd-va; GOLUBE', S. P., tekhn. red.; LAUT,
tekhn. red.

[Titanium metallurgy; investigating the electric melting
of titanium slags] Metallurgiya titana; issledovanie
elektroplavki titanovykh shlakov. Moskva, Izd-vo AN SSSR,
1963. 198 p. (MIRA 16:9)

(Titanium--Electrometallurgy)

L 12785-63

EWP(q)/EWT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AP3002388

S/0279/63/000/003/0098/0109

AUTHOR: Savin, V. D.; Reznichenko, V. A. (Moscow)

TITLE: Reduction of titanium tetrachloride by sodium

SOURCE: AN SSSR. Izv. Otd. tekhnicheskikh nauk. Metallurgiya i gornoye delo, no. 3, 1963, 98-109

TOPIC TAGS: titanium tetrachloride, sodium, reduction, metallic titanium, catalytic reaction

ABSTRACT: The mechanism and kinetic peculiarities of titanium tetrachloride reduction by sodium, as well as the role of titanium sponge formation and the addition of sodium chloride, were studied in the present investigation. An installation was set up which permitted the simultaneous study of the reaction kinetics by thermographic means in both the condensed and gaseous phases. The experiments were conducted at temperatures ranging from 550-860C in an atmosphere of argon. In the first series of experiments portions of titanium tetrachloride of 1.0, 1.5 and 2.0 cc were introduced into the reactor simultaneously with 8, 12, and 16 gms of sodium. In the second series, 25-gm portions of fused sodium chloride as such or with the addition of 5-gm sodiumthermic titanium were used. At the end

Card 1/2

L 12785-63

ACCESSION NR: AP3002388

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of the experiment the reactor was allowed to cool and the reaction product subjected to study. It was found that the reduction of titanium tetrachloride by sodium represented a complicated physico-chemical process in which participated not only metallic sodium in various states of aggregation but also the chlorides of titanium in various valency states and their solutions in sodium chloride. During the initial phase of the process the catalytical phenomena predominated, with a high reaction rate and a low activation energy, while at a more advanced stage of sodium utilization the diffusion phenomena set the pattern. Orig. art. has: 6 figures, 13 formulas and 2 tables.

ASSOCIATION: none

SUBMITTED: 14Mar63

DATE ACQ: 12Jul63

ENCL: 01

SUB CODE: 00

NO REF SOV: 004

OTHER: 004

Card 2/32

REZNICHENKO, V.A.

Electrothermics of titanium slags. Titan i ego splavy no.9:3-9 '63.
(MIRA 16:9)

(Titanium--Electrometallurgy)
(Slag--Electric properties)

REZNICHENKO, V.A.; KHALIMOV, F.B.; UKOLOVA, T.P.

Titanium oxides. Titan i ego splavy no.9:42-69 '63.(MIRA 16:9)
(Titanium oxide)

REZNICHENKO, V.A.; SIYAPOV, G.V.; SOLOV'YEV, V.I.

Two-stage smelting of ilmenite concentrates. Titan i ego splavy
no.9:96-104 '63. (MIRA 16:9)
(Titanium--Electrometallurgy)

REZNICHENKO, V.A.; SOLOMAKHA, V.P.

Studying the chlorination process of magnesium metatitanate (geiki-
elite). Titan i ego splavy no.9:136-139 '63. (MIRA 18:9)
(Geikielite) (Chlorination)

MOYKOV, S.G.; REZNICHENKO, V.A.

Studying crystallization processes of titanium dioxide with interaction between titanium tetrachloride and oxygen. Titan i ego
splayv no.9:166-171 '63. (MIHA 16:9)
(Titanium oxide) (Crystallization)

SAVIN, V.D.; REZNICHENKO, V.A.

Studying the kinetics and the mechanism of titanium tetrachloride
reduction by sodium. Titan i ego splavy no.9:172-185 '63.

(MIRA 16:9)

(Titanium—Metallurgy)
(Thermochemistry)

MIROCHNIKOV, V.S.; REZNICHENKO, V.A.

Titanium interaction with moisture at 400 to 600° temperatures.
Titan i ego splavy no.9:186-190 '63. (MIRA 16:9)
(Titanium—Metallurgy) (Oxidation)
(Metals, effect of temperature on)

BALIKHIN, V.S.; REZNICHENKO, V.A.

Titanium and aluminum electrode potentials in fused sodium chloride.

Titan i ego splavy no.9:220-224 '63. (MIRA 16:9)

(Titanium chloride) (Aluminum chloride)

(Separation (Technology))

BALIKHIN, V.S.; REZNICHENKO, V.A.

Solubility of aluminum and titanium chloride in fused chlorides.
Titan i ego spravy no.9:225-229 '63. (MIRA 16:9)
(Separation (Technology)) (Solubility)
(Chlorides)

BALIKHIN, V.S.; REZNICHENKO, V.A.

Electrolytic separation of binary alloys in the system Ti - Al.
Titan i ego splavy no.9:230-235 '63. (MIRA 16:9)
(Titanium-aluminum alloys)
(Separation (Technology))

MIROCHNIKOV, V.S.; REZNICHENKO, V.A.

Investigations on the hydrometallurgical treatment of cathodic residues of titanium in presence of fluoride-bearing salts. Titan i ego splavy no.9:252-254 '63. (MIRA 16:9)

(Titanium—Metallurgy)

(Hydrometallurgy)

REZNICHENKO, V.A.; BOBROV, V.I.; REVIKIN, A.V.; SOLOV'YEV, V.I.

Smelting titanium in a DVP-200-500 furnace. Titan i ego splavy
no.9:255-263 '63. (MIRA 16:9)
(Titanium—Electrometallurgy)

L 18583-65 EPA(s)-2/EWT(m)/EPF(n)-2/EWP(t)/EWP(b) Pt-10/Pu-4 IJP(c) JD/
WH/JG/MLK

ACCESSION NR: AT4045993

S/0000/64/000/000/0041/0054

AUTHOR: Savin, V. D. ; Reznichenko, V. A.

6+1

TITLE: Sodium reduction of lower titanium chlorides

SOURCE: AN SSSR. Institut metallurgii. Issledovaniya metallov v zhidkom i
tverdom sostoyaniyakh (Research of metals in liquid and solid states). Moscow,
Izd-vo Nauka, 1964, 41-54

TOPIC TAGS: titanium chloride, sodium reduction, black salt

ABSTRACT: The authors investigated the kinetics, temperature conditions, crystallization and the mechanism of the processes that accompany the reduction of various lower titanium chloride melts and, in particular, titanium trichloride and complex lower titanium chloride compounds such as "black salt." They found that at the initial stage of sodium reduction, trivalent titanium was reduced to bivalent titanium and, subsequently, to metallic titanium. Throughout the melt and in the gaseous phase several primary and secondary reactions were

Card 1/3

L 18583-65

ACCESSION NR: AT4045993

observed at the initial stage of reduction. The reduction is confined to a zone which shifts from the melt surface to the bottom of the reactor. Trivalent titanium disappears from the melt at a 40 to 50% reduction. Metallic titanium is deposited on the reactor walls in the form of small dendrites. Secondary reactions lead to the formation of considerable amount of finely dispersed titanium. The sodium reduction of "black salt" is accompanied by auxiliary processes brought on by the disintegration of the black salt complexes, phase transformations and the reduction of their products. Initially, the reduction of trivalent titanium takes place and the accumulation of bivalent titanium followed by the simultaneous reduction of tri- and bi-valent titanium and, finally, by the predominant reduction of bivalent titanium. During the reduction of trivalent titanium the activation energy is 1765 cal/mol and reaches 3960 cal/mol for black salt. Good results in the formation of coarse crystalline titanium were obtained by the use of black salt melts and titanium bichloride with sodium chloride. However, titanium trichloride did not give the desired results. The addition of sodium chloride to titanium chloride melts enhances the precipitation of coarse-crystalline titanium not only by inhibiting the process but also by binding titanium trichloride into $\text{TiCl}_3 \cdot 3\text{NaCl}$ which does not react to metallic titanium. Orig. art. has: 6 figures

Card 2/3

L 18583-65

ACCESSION NR: AT4045993

and 2 tables

ASSOCIATION: None

SUBMITTED: 18May64

ENCL: 00

SUB CODE: IC

NO REF SOV: 004

OTHER: 003

Card 3/3

SAVIN, V.D., REZNICHENKO, V.A.

Thermographic method of studying heterogeneous processes. Zav. Lab.
30 no.1:63-67 1967. (MIRA 17:9)

1. Institut metallurgii imeni A.A. Baykova.

ACC NR: AT7004213

(N)

SOURCE CODE: UR/0000/66/000/000/0169/0176

AUTHORS: Savin, V. D.; Reznichenko, V. A.

ORG: none

TITLE: Quantitative thermographic investigation of the reduction of titanium tetrachloride with metallic sodium

SOURCE: AN SSSR. Institut metallurgii. Eksperimental'naya tekhnika i metody vysokotemperaturnykh izmereniy (Experimental techniques and methods of high temperature measurement). Moscow, Izd-vo Nauka, 1966, 169-176

TOPIC TAGS: titanium compound, sodium, chemical reduction, oxidation reduction reaction

ABSTRACT: The reduction kinetics of the reduction of titanium tetrachloride with metallic sodium was investigated. The study was carried out with a specially constructed contactless thermobarographic apparatus which records simultaneously the heat and pressure of the reaction as a function of time. The heat effect is evaluated after the method of N. A. Nedumov (Vysokotemperaturnyy metod beskontaktnoy termografii. - Zhurn. fiz. khimii, 1960, No. 1). The apparatus was used to determine the rate of titanium tetrachloride reduction with sodium in the temperature interval of 550--860C. The experimental results were compared with the results of V. D. Savin

Card 1/3

ACC NR: AT7004213

and V. A. Reznichenko (Vosstanovleniye chetyrekhkhloristogo titana natriyem. Izv. AN SSSR, OTN, seriya Metallurgiya i gornoye delo, 1963, No. 3) (see Fig. 1). It was

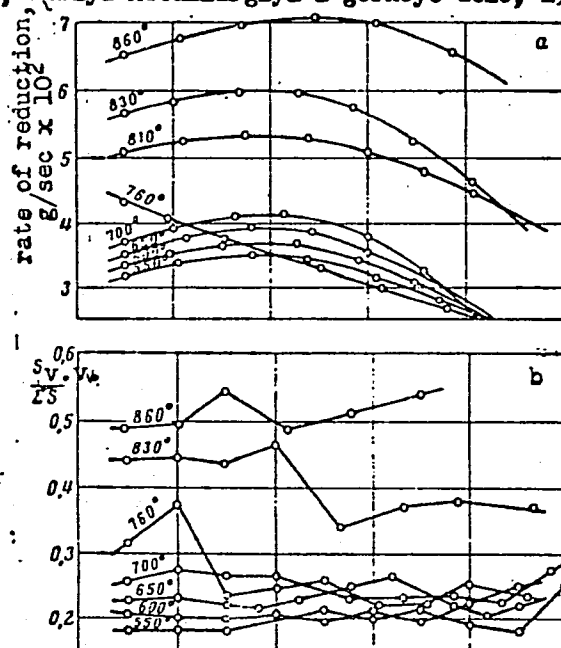
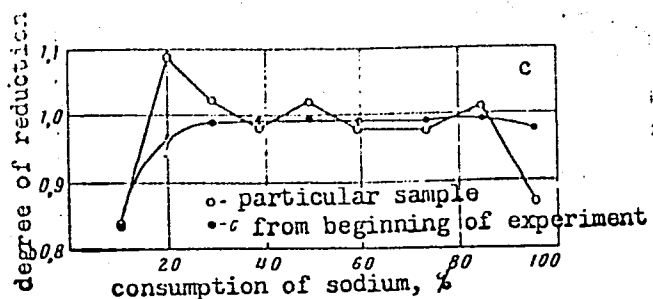


Fig. 1. Dependence of the reduction rate of TiCl_4 (a), the degree of reaction progress in the gas phase (b) and consumption of sodium (c), where Sv.v. is the peak area of the upper zone and $\sum S$ the sum of peak areas of the upper and lower zone.

Card 2/3

ACC NR: AT7004213



found that the optimum heat flux interval was in the region of 1700--3400 cal and that, at these conditions, the maximum experimental error was on the order of 4.5%. Orig. art. has: 5 graphs and 9 equations.

SUB CODE: 07/

SUBM DATE: none/

ORIG REF: 003

Card 3/3

SHMAKOVA, V.I.; YUZHAKOVA, N.N.; REZNICHENKO, V.G.; GLEBOV, I.T.; VOLKOV, A.S.;
URZILYA, N.Ye.; BEEHTEREV, P.A.; RYS', G.I.; VORONINA, M.N.; GVOZDINTS-
KIY, I.M.; VARAKSINA, M.P.; MASTERSKIKH, M.A.; GONCHAROVA, V.A.;
BICHEVINA, A.M.; SOROKIN, M.A., red.; GRIN', Ye., tekhn.red.

[Economy of Altai Territory during the past 40 years; a statistical
manual] Narodnoe khoziaistvo Altaiskogo kraia za 40 let. Sovetskoi
vlasti; statisticheskii sbornik. Barnaul, Altaiskoe knizhnoe izd-vo.
1957. 110 p. (MIRA 11:3)

1. Altayskiy kray. Statisticheskoye upravleniye. 2. Statisticheskoye upravleniya Altayskogo kraya (for all except Sorokin, Grin')
1. 3. Nachal'nik Statisticheskogo upravleniya Altayskogo kraya (for Sorokin)
(Altai territory--Statistics)

REZNICHENKO, V.I., inzh.

Supporting capacity and general deformability of one-piece
three-dimensional blocks. Stroi.konstr. no.1:30-44 '65.
(MIRA 19:1)

1. Nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy
Gosstroya SSSR, Kiyev.

REZNICHENKO, V.I., inzh.

Method of investigating three-dimensional blocks and
a universal press-stand for testing full-scale elements.
Stroi.konstr. no.1:183-190 '65.

(MIRA 19:1)

1. Nauchno-issledovatel'skiy institut stroitel'nykh
konstruktsiy Gosstroya SSSR, Kiyev.

PLEKHOV, N.D.; REZNICHENKO, V.I., inzh.

Three-dimensional units for housing construction. Bet.i zhel.-
bet. no.4:152-157 Ap '60. (MIRA 13:8)

1. Chlen-korrespondent Akademii stroitel'stva i akadmeii (for
Plekhev).

(Precast concrete construction)

PLEKHOV, N.D.; LUPAN, A.M.; ABRAMOV, L.S.; BOGDANOVSKIY, V.S.;
REZNICHENKO, V.I.; GREKOVA, Z.I.; GOLUB, P.I.;
ENDRZHEYEVSKIY, Ye.V.; BELOSHKURSKIY, P.I.; PODDUBNAYA,
N.A.; MIROSHNIKOV, P.P.; KORNEYEVA, L.P.; ZLOTNIKOV,
G.Z.; PAVLIS, G.F.; SKACHKOV, I.A.; SEDELEVA, Ye.P.;
POLTORATSKAYA, E.A., red.; LEUSHCHENKO, N.L., tekhn.red.

[Three-dimensional apartment house construction] Ob"emnoe
domostroenie. Kiev, Gosstroizdat USSR, 1963. 165 p.
(MIRA 17:2)

1. Nauchno-issledovatel'skiy institut stroitel'nykh kon-
struktsiy.

REZNICHENKO, V.I., inzhener.

Problems in designing panel-built apartment houses. Nov.v stroi.
tekh., no. 4: 22-42 '55. (MIRA 10:10)

1. Nauchno-issledovatel'skiy institut stroitel'noy tekhniki
Akademii arkhitektury USSR.
(Apartment houses) (Precast concrete construction)

REZNICHENKO, V.I., inzh.

Refining the approximate method for designing buildings to be
constructed on ground located over mines. Nov.v stroi.tekh.
no.13:40-55 '59. (MIRA 13:4)
(Soil mechanics) (Foundations)

REZNICHENKO, Vladimir Sofronovich; KHANDROS, Dmitriy Anatol'yevich;
ZOLOT'KG, A.G., inzh., retsenzent: SMIRNOVA, G.V., tekhn.
red.

[Transparent stencils for drawing and construction work] Pro-
zrachnye trafarety dlia chertezhno-konstruktorskikh rabot.
Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1961.
41 p. (MIRA 15:2)

(Stencils and stencil cutting)

REZNICHENKO, V.S.; KYUBLER, O.A.; BOLTUKHIN, A.K., dots.,
retsensent; LONOV, P.M., inzh., red.

[Transparent drawing and design stencils and materials;
album of drawings] Irozhachnye chertezhno-konstrukterskie
trafarety i prinadlezhnosti; al'bom chertezhei. Moskva,
Mashinostroenie, 1964. 130 p. (MIRA 17:8)

REZNICHENKO, V.S.

Determining backlashes by means of electric methods. Izv. tekhn.
no. 5:76 S-0 '56. (MIRA 10:2)

(Electric measurements)

ANTIPIN, V.I.; BUDANOV, N.D.; KOTLUKOV, V.A.; LEYBOSHITS, A.M.;
 PROKHOROV, S.P., kand.geol.-miner.nauk; SIRMAN, A.P.;
 FALOVSKIY, A.A.; SHTEYN, M.A.; BASKOV, Ye.A.; BOGATKOV,
 Ye.A.; GANEYEVA, M.M.; ZARUBINSKIY, Ya.I.; IL'INA, Ye.V.;
 KATSIYAYEV, S.K.; KOMPANIYETS, N.G.; NELYUBOV, L.P.;
 PONOMAREV, A.I.; REZNICHENKO, V.T.; RULEV, N.A.; TSELIGOROVA,
 A.I.; ALSTER, R.K.; SHVETSOV, P.F.; VYKHODTSEV, A.P.; KOTOVA,
 A.I.; KASHKOVSKIY, G.N.; LOSEV, F.I.; ROMANOVSKAYA, L.I.;
 PROKHOROV, S.P.; MATVEYEV, A.K., dots., retsenzents; CHEL'TSOV,
 M.I., inzh., retsenzents; KUDASHOV, A.I., otv. red.; PETRYAKOVA,
 Ye.P., red. izd-va; IL'INSKAYA, G.M., tekhn. red.

[State of flooding and conditions for the exploitation of coal-
 bearing areas in the U.S.S.R.] Obvodnennost' i usloviia eksplu-
 atatsii mestorozhdenii ugol'nykh raionov. Pod nauchn. red.
 S.P.Prokhorova. Moskva, Gosgortekhnizdat, 1962. 243 p.

(MIRA 15:7)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut gidro-
 geologii i inzhenernoy geologii. 2. Kafedra geologii i geo-
 khimii goryuchikh iskopayemykh Moskovskogo Gosudarstvennogo
 universiteta (for Matveyev).

(Coal geology) (Mine water)

REZNICHENKO, Vladimir Vasil'evich, 1870-

In the mountains and steep slopes of the Kanev Dislocation; geological guidebook.
Kyiv, Druk. Kyivs'koi filii Knyhospilky, 1926. 82 p. (51-48462)

QE276.R4

1981-1982, V.V.; 1981-1982, Val.L.

Chloromethylation of naphthalide. Var. Khim. zhur. 30 no.10:
1089-1091 '81. (MIRA 27:11)

L. Rubeshanskiy filial Nauchno-issledovatel'skogo instituta
organicheskikh poluproduktov i krasiteley.

REZNICHENKO, V.V.; FLAKIDIN, Val. L.

Nitration of naphthalide and its derivatives. Ukr. khim. zhur.
31 no.4:385-387 '65. (MIRA 18:5)

1. Rubezhanskiy filial Nauchno-issledovatel'skogo instituta
organicheskikh poluproduktov i krasiteley i Rubezhanskiy filial
Khar'kovskogo politekhnicheskogo instituta.

PLAKIDIN, Val.L.; REZNICHENKO, V.V.

Nitration of naphthalide and its derivatives. Ukr. khim. zhur.
26 no.6:733-735 '60. (MIRA 14:1)

1. Rubezhanskiy khimicheskiy kombinat i Rubezhanskiy filial
Nauchno-issledovatel'skogo instituta organicheskikh poluproduktov
i krasiteley im. K.Voroshilova.
(Naphthalene)

REZNICHENKO, V.V.

Naphthalic acid and its substitution products. A. T. Tochkilkin, V. V. Reznichenko, and A. Ya. Petrova. U.S. S.R. 104,742, Jan. 25, 1957. Acenaphthene or its substitution product is oxidized with NaOCl to the title compds in an alk. medium in the presence of an O carrier such as pyrolysate activated with HCl without heating followed by diln. of the mass with H₂O and filtration. M. Hosh

REZNICHENKO, V. Ya.

Reznichenko, V. Ya., and Etinger, S. M., Engineers. Welded Wheel Constructions
for Centrifugal Pumps and Compressors page 98

The authors familiarize the reader with the experience gained at a plant
in the field of construction and manufacturing welded stainless-steel wheels
for high-speed feed water pumps, pumps used at cracking plants, and centrifugal
gas compressors.

Steam and Gas Turbine Construction. Moscow, Mashgiz 1957. 351 pp.

L 04614-67 ENP() / EST() / ESI() / IPI() / IPI() / IPI()

ACC NR: AP6033574

SOURCE CODE: UR/0181/66/008/010/3084/3086

AUTHOR: Brodin, M. S.; Vitrikhovskiy, N. I.; Zakrevskiy, S. V.; Reznichenko, V. Ya.

ORG: Institute of Physics, AN UkrSSR (Institut fiziki AN UkrSSR); Institute of Semiconductors, AN UkrSSR, Kiev (Institut poluprovodnikov AN UkrSSR)

64
B

TITLE: Generation of compound $\text{CdS}_x\text{—CdSe}_{1-x}$ crystals excited by a ruby laser

SOURCE: Fizika tverdogo tela, v. 8, no. 10, 1966, 3084-3086

TOPIC TAGS: solid state laser, semiconductor laser, cadmium sulfide, cadmium selenide, mixed semiconductor, luminescent crystal, stimulated emission

ABSTRACT: The present work is a continuation and expansion of an earlier study (UFZh, 11, 344, 1966) on the luminescence and generation of CdS—CdSe crystals excited by a two-photon ruby laser. The following $\text{CdS}_x\text{—CdSe}_{1-x}$ crystal compositions with the corresponding forbidden band ΔE were studied: 84—16% ($\Delta E \approx 2.44$ eV); 76—24% ($\Delta E \approx 2.38$ eV); 72—28% ($\Delta E \approx 2.34$ eV); 63—37% ($\Delta E \approx 2.28$ eV); and 42—58% ($\Delta E \approx 2.12$ eV); 38—62% ($\Delta E \approx 2.09$ eV); and 28—72% ($\Delta E \approx 2.01$ eV). All values of ΔE are given for $T = 77\text{K}$. All specimens were cut in the form of rectangular parallelepipeds or wedges with highly polished ends to form a plane resonator. The resonator length varied from 1 to 6 mm. The N-cooled specimens were pumped by a Q-switched ruby laser at power densities of 10—150 Mw/cm^2 and by a mercury lamp. Experimental data indicate that generation can be achieved in $\text{CdS}_x\text{—CdSe}_{1-x}$ crystals

Card 1/2

L 04614-57

ACC NR: AP6033574

(with λ varied over a wide range) pumped by a ruby laser over a range from 4960 to 6800 Å. The experimentally observed polarization of the luminescence band and its width and frequency suggest the exciton nature of the stimulated emission. The generation line shift may be emitted by optical phonons. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 28Mar66/ ORIG REF: 008/ OTH REF: 001/ ATD PRESS: 5100

Card 2/2 *LC*

BEDCHER, F.S., inzh.; REZNICHENKO, V.Ya., inzh.

Factory bench tests of actual compressors manufactured by the
Leningrad Metalworks. Energomashinostroenie 7 no.2:1-5 F '61.
(MIRA 16:7)

(Compressors--Testing)

BOKIY, V.B., kand. tekhn. nauk (Donetsk); NEDODAYEV, N.V., inzh.
(Donetsk); REZNICHENKO, V.Ya., inzh. (Donetsk)

Results of observations of the performance of shifting
mesh fencing and fill. Ugol' 38 no.9:26-30 S '63.
(MIRA 16:11)

L 29517-65 EWT(1)/EWT(m) IJP(c) RM

ACCESSION NR: AP5005913

S/0185/65/010/002/0178/0186

AUTHOR: Brodin, M. S.; Reznichenko, V. Ya. (Reznichenko, V. Ya.)

TITLE: Investigation of a circular polarization of the luminescence of a sodium uranylacetate crystal

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 10, no. 2, 1965, 178-186

TOPIC TAGS: circular polarization, luminescence polarization, luminescence circular polarization, circular dichroism, polarization degree

ABSTRACT: The circular polarization P of the principal luminescence bands of sodium uranylacetate crystals was measured at temperatures of liquid helium, hydrogen, and nitrogen (20 and 77K), and the dependence of P on temperature, treatment, and aging was investigated. In addition, the luminescence spectrum at T = 20K was systematized. Contrary to the generally accepted point of view (based on quantitative investigations conducted by Samoylov (ZhETF, 18, 1030, 1948)), the degree of polarization of these bands appears to be incomplete (it did not exceed 0.63 in the specimens investigated). The polarization was less than the circular dichroism of the respective exciton bands in the absorption spectrum. Increased temperature and aging of the crystal led to a marked decrease in polarization without disturb-

Card 1/2

L 29517-65

ACCESSION NR: AP5005913

ing the resonance coincidence of the initial luminescence and absorption bands, especially when the crystals had undergone previous thermal treatment, i.e., either heating or cooling. Such treatment usually spoils crystals by increasing the number of defects in them. Thus, an increase in defects results in circular polarization of the luminescence bands and in decreased luminescence brightness. The assumption is made that defects play a double role in the mechanism of de-excitation of crystals by 1) promoting exciton de-excitation without localization of energy (wide-spread circular dichroism is associated with this) and 2) increasing the interaction between the zones of the left and right excitons. The latter factor leads to decreased circular polarization. Orig. art. has: 3 figures and 2 tables. [JA]

ASSOCIATION: Instytut fizyki AN URSR, Kiev (Institute of Physics, AN UkrSSR)

SUBMITTED: 09May64

ENCL: 00

SUB CODE: SS, 0P

NO REF SOV: 009

OTHER: 001

ATD PRESS: 3197

Card 2/2

L 40204-66 ENT(d)/EHP(c)/EHP(v)/I/ENL(k)/ENL(l) IJE(c) RH
 ACC NR: AP6030053 SOURCE CODE: UR/0114/66/000/004/0002/0008
 64
 3
 AUTHOR: Polishchuk, V. L. (Engineer); Orlov, M. D. (Engineer); Chernin, Ye. N. (Engineer); Reznichenko, V. Ya. (Engineer); Kotov, Yu. V. (Engineer); Bodrov, I. C. (Engineer); Yamalutdinov, I. T. (Engineer); Ol'khovskiy, G. G. (Candidate of technical sciences)
 ORG: none
 TITLE: Results of testing first model and series examples of gas turbines GTN-9-750 of Leningrad Metallurgical Plant im. XXII CPSU Congress
 SOURCE: Energomashinostroyeniye, no. 4, 1966, 2-8
 TOPIC TAGS: gas turbine, pipeline, centrifugal pump, electric power production, turbine design, turbine compressor/GTN-9-750 gas turbine, NG-280-9 centrifugal pump
 ABSTRACT: A description of the testing of the 9000 kw GTN-9-750 gas turbine, designed to drive the NG-280-9 centrifugal pipeline pump, used on the Bukhara-Ural gas pipeline. The tests showed that the actual power produced in operating conditions is 8,750 kw, efficiency 25%. The maximal power produced without additional equipment and regenerators is 9600-10,000 kw. The characteristics of the main elements of the turbine were found to be near the design characteristics: the adiabatic efficiency of the compressor is 89%, the low and high pressure turbine sections operate at 85% and 89-90% efficiency. Long-term testing with repeated stops and starts showed that the unit as modified from the prototype is suitable for operation in the gas pipeline system. Orig. art. has: 5 figures, 7 formulas and 3 tables.
 [JPRS: 36,501]
 SUP CODE: 13, 10 / SUBM DATE: none / ORIG REF: 002
 Cord 1/1 UDC: 621.438.001.41

ALEYNIKOV, A.A., kand.tekhn.nauk; NEDODAYEV, N.V., inzh.;
REZNICHENKO, V.Ya., inzh.

Behavior of wall rock during the working of steep seams with a
diagonal face. Ugol' Ukr. 7 no.11:22-24 N '63. (MIRA 17:4)

BRODIN, M.S.; REZNICHENKO, V.Ya. [Reznichenko, V.IA.]

Study of circular polarization of the luminescence spectrum
in sodium uranyl acetate crystals. Ukr. fiz. zhur. 10 no.2:
178-186 F '65. (MIRA 18:4)

1. Institut fiziki AN UkrSSR, Kiyev.

S/114/61/000/002/001/007
E194/E255

AUTHORS: Becher, F. S. and Reznichenko, V. Ya., Engineers
TITLE: Rig Tests of Full-Scale Compressors of the Leningrad
Metal Works
PERIODICAL: Energomashinostroyeniye, 1961. No. 2, pp. 1-5
TEXT: In modern gas turbines 60 or 70% of the turbine output is expended in driving the compressors; accordingly, compressor efficiency is very important and must be studied carefully. It is also important to study the reliability of the machines during factory rig tests because blade failure in axial compressors is usually due to vibration effects. The LMZ has developed a works rig for studies of this kind. Drive is provided by a steam turbine, so that the speed range is wide. The rig is equipped for a closed circuit operation, the intake and delivery pipes being connected to an air cooler, whilst a circuit consisting of compressor, air lines and cooler is connected to the works' compressed-air system operating at a pressure of between 3 and 5 atm and to a group of steam ejectors. By changing over from the open system to the closed the capabilities of the rig were extended and it was

Card 1/ 7

S/114/61/000/002/001/007
S194/E255

Rig Tests of Full-Scale Compressors of the Leningrad Metal Works
possible to test compressors with an inlet pressure of 3 to 5 atm.
When operated in closed circuit the rig could test compressors
under conditions closely approaching those of service and could
also be used to solve a number of special problems, for instance
those associated with the influence of air density. This article
describes the results of tests on two compressors, one for low and
one for high pressure which were described in an article by M. I.
Grinberg and others in Energomashinostroyeniye No. 6, 1956. The
test programme included: Taking universal characteristics, i.e.
determining the compression and efficiency of the compressor at
various outputs and speeds; detailed investigation of the operation
of individual stages and of the aerodynamic properties of the
inlet and discharge pipework; an investigation of the influence of
density or Reynolds number on the characteristics of compressor
and stages; study of the behaviour of the compressor under various
different conditions; and determination of the dynamic stresses in
the blades and the influence of air density on their magnitude.
The measurements that are made in the course of the test are

Card 2/ 7

S/114/61/000/002/001/007
E194/E255


Rig Tests of Full-Scale Compressors of the Leningrad Metal Works
enumerated. Fig. 2 shows the universal characteristics of the two compressors in dimensionless co-ordinates namely, the relative volumetric outputs and the relative speeds. It will be seen that the efficiency of the low-pressure compressor is high, being of the order of 90%, and the compression ratio ϵ obtained in the tests is 7% greater than the rated value. The high-pressure compressor has the relatively high efficiency of 86% and the compression provided is adequate. It is found that the experimental characteristics lie appreciably above the calculated characteristics, though the difference is not so great at low speeds. The method of calculating the characteristics of the low-pressure compressor is explained and the possible causes of difference between the calculated results and experiment are discussed. It is attributed to basing the design on test results from model stages without adequate allowance for the circumstance that the full-scale stages can, under certain circumstances, give better results than the models. In addition, stages normally connected in series behave differently when tested separately, particularly as the speed is

✓

Card 3/7

S/114/51/000/002/001/007
E194/E255

Rig Tests of Full-Scale Compressors of the Leningrad Metal Works altered. This is mainly because of distortion of the inlet velocity distribution. It is of practical importance to determine the range of stable operation of compressors and particular attention was paid to this point in carrying out the tests. The limit was set when pressure pulsations were observed on the customary instruments, usually accompanied by a characteristic sound. Agreement between calculated and experimental zones of stability was very good. The comparison was then made between figures obtained for the static pressure-drop in the inlet duct and for the restoration of static pressure in the discharge duct, the figures being obtained on the one hand in the wind tunnel of the steam turbine laboratory and on the other, from tests on the rig. In the case of the low-pressure compressor there was a certain divergence, the resistance being 17% higher than expected on the intake side and somewhat lower than expected on the discharge side. In the case of the high-pressure compressor, the large number of stages and the corresponding divergence from the accurate conditions of the modelling made greater differences likely.



Card 4/7

S/114/61/000/002/001/007
E194/E255

Rig Tests of Full-Scale Compressors of the Leningrad Metal Works

Comparison of the model and full-scale characteristics by groups of stages shows that the pressure characteristics of a four-stage model compressor lies below the pressure characteristics of a group of four stages of the full-scale machine, the difference being 13% under rated conditions. In this case too a scale effect was found. During closed-circuit tests the inlet conditions could range from a pressure of 3.5 atm to a vacuum of 0.4 atm and so it was possible to investigate the influence of the Reynolds number on the aerodynamic characteristics of the compressor. The results were found to be in good agreement with published data. The results of investigations of vibration and dynamic stresses in the compressors have been described in an article by L. S. Ryzhkova (Ref. 9). The following conclusions are drawn from the work. With the equipment and test methods used, the factory rig could test full-scale compressors to compare their parameters with the specified requirements. It was shown that the high and the low-pressure compressors tested are high-efficiency machines fully meeting the requirements. An investigation of the aerodynamic

Card 5/7

S/114/61/000/002/001/007
E194/E255

Rig Tests of Full-Scale Compressors of the Leningrad Metal Works
elements of the flow parts confirmed the correctness of the
assumptions made in the calculations. It was established that in
transition from the model to full-scale the head developed by the
compressor increases. The difference is such that it should be
taken into account. Changes in Reynolds number with fixed geomet-
rical dimensions in the range 2×10^5 - 16×10^5 had no influence
on the aerodynamic and vibration characteristics of the compressors
investigated. There are 6 figures, 2 tables and 9 references: 8
Soviet and 1 non-Soviet.

Card 6/7

L 21392-66 FBD/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/ETC(f)/EWG(m)/T/EWP(t)/EWP(k)/EWA(h)
 ACC NR: AP6009073 SOURCE CODE: UR/0185/66/011/003/0344/0345
 IJP(c) WG/RDW/JD/TH
 AUTHOR: Brodin, M. S.; Vytrykhovs'kyi, M. I.; Zakrevs'kyi, S. V.; Reznichenko, V. Ya.

ORG: Physics Institute, AN URSR (Instytut fizyky AN URSR); Institute of Semi-conductors, AN URSR, Kiev (Instytut napivprovidnykiv AN URSR)

TITLE: Laser-type emission by ¹¹CdS—¹¹CdSe crystals by means of ¹⁵ruby-laser two-photon excitation 54
B

SOURCE: Ukrayins'kyi fizychnyy zhurnal, v. 11, no. 3, 1966, 344-345

TOPIC TAGS: mixed crystal, luminescent crystal, laser pump, laser pumping

ABSTRACT: Investigations were made of the emission of CdS—CdSe mixed crystals pumped by a ruby-laser two-photon mechanism to determine the possibility of laser generation. Three-component CdS—CdSe crystals with 28, 37, 63% CdSe were investigated. Their forbidden gap widths at 77K were 2.24, 2.28, and 2.02 eV, respectively. The crystals were cut as rectangle parallelepipeds with accurately polished plane-parallel faces. Their thickness varied from 1 to 2.5 mm. Thin single-crystal plates with thickly grooved faces were also investigated. Specimens cooled to 77K were excited by single pulses from a ruby laser. The pump power density varied from 10 to 100 Mw/cm². The emission spectra were photographed with a spectrograph. One narrow band located close to the absorption edge was observed in the luminescence spectra of all crystals at two-photon excitation. The band was sharply polarized in the direction perpendicular to the hexagonal axis c. The width of the band in the Card 1/2

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ACC NR: AP6009073

case of massive crystals with plane-parallel faces decreased when the pumping was increased. At maximum pumping it becomes $10-15 \text{ cm}^{-1}$. Under the same pumping conditions the width of the band of imperfect lamina was considerably larger, approximately $80-100 \text{ cm}^{-1}$. The intensity at the maximum of the band increased when the pump force increased and at a pump force density of 100 Mw/cm^2 it became quite large. At sufficiently high pumping, the emission of crystals with plane-parallel faces had a directed character. For a $\text{CdS}_{0.72}-\text{CdSe}_{0.28}$ crystal 1 mm thick, the divergence of the beams was 3° . A value of $5-7 \text{ cm}^{-1}$ was obtained for the coefficient of two-photon absorption at a maximum density of the laser emission force at which the crystal is still intact. Orig. art. has: 1 figure. [JA]

SUB CODE: 20/ SUBM DATE: 27Dec65/ ORIG REF: 004/ ATD PRESS: 4221

Card 2/2

REZNICHENKO, V.Ya., inzh.; ETINGER, S.M., inzh.

Welded structures of runners in centrifugal pumps and compressors.
[Trudy] LMZ no.5:98-104 '57. (MIRA 11:6)
(Gas-turbine disks)

✓ 2078. Penetration of high polymer solutions into rubber and leather: G. A. BLOKH, S. H. KALIK, G. I. LARVAKOVA, E. YA. REZNICHENKO, and E. V. TAYRBYUK. Lekhnizh Promizh, 1963, 15, no. 4, 30-2; Chem. Abs., 1966, 50, 5350. Depth of penetration of gutta-percha and rubber cements was tested, using radioactive sulphur. The cements penetrated deeper into sole rubber than into rigid leather and the penetration increased with rise of temperature. Intensity of radiation is an index chiefly of the radiation of the external layer only. 391123.3

REZNICHENKO, Ye., inzh.

Subway builders. Mast.ugl. 9 no.7:22-23 J1 '60. (MIRA 13:7)
(Tunneling) (Subways)

KRIVOSHEIN, A.N., inzh.; REZNICHENKO, Ye.D., inzh.

Using the open-cut method in constructing subway tunnels. Transp.
stroi. 9 no.11:20-23 N '59 (MIRA 13:3)
(Moscow--Subways)

KRIVOSHEIN, A.N., inzh.; REZNICHENKO, Ye.D., inzh.; YAKOBSON, I.M., inzh.

Precast reinforced concrete linings in the runway tunnels of
the Moscow subway. Shakht. Stroi. 4 no.3:19-23 Mr '60.

(MIRA 13:11)

(Moscow--Subways) (Precast concrete construction)

REZNICHENKO, Ye.D., inzh.; KRIVOSHEIN, A.N., inzh.

Constructing shallow tunnels without opening streets. Transp. stroi.
10 no.9:18-21 S '60. (MIRA 13:9)

(Moscow--Tunneling)

ACCESSION NR: AT4038881

S/2884/60/106/000/0037/0042

AUTHOR: Reznichenko, Ye. P.

TITLE: Determination of the heat conductance of synthetic benzine, kerosene and paraffin oil

SOURCE: Novochoerkassk. Politekhnikheskiy institut. Trudy*, v. 106, 1960. Teplotekhnika i gidravlika (Heat engineering and hydraulics), 37-42

TOPIC TAGS: heat, heat conductance, thermal conductivity, benzine, kerosene, paraffin oil, calorimeter, vacuum calorimeter

ABSTRACT: The purpose of the present study was to determine the specific gravity and heat conductance of synthetic benzine, kerosene and paraffin oil. The former was determined in a temperature interval of 10-90C by the well-known pycnometer method. The heat conductance was determined by the direct heating method on a low-volume vacuum calorimeter, the construction and operation of which are described in detail. The author explains the formula by which the heat conductance of the test liquid was determined:

$$C_p = \frac{Q - A\Delta t}{G\Delta t}$$

(1)

Card

1/6

ACCESSION NR: AT4038881

where Q is the amount of heat imparted to the calorimeter during the experiment; Δt is the increase in temperature of the test liquid as a result of heating; G is the weight of the liquid in the calorimeter as averaged before and after the calorimeter experiment; A is the calorimeter constant, i.e., the amount of heat which goes to heat the entire calorimetric system, excluding the calorimeter liquid, as the temperature changes by 1°C in kcal/ $^\circ\text{C}$. The temperature of the test liquid was tested not only during the operation of the heater, but also for five minutes both before and after the experiment. The temperature of the thermostatic liquid was selected as the mean temperature between t_1 and t_2 , thus making it possible to eliminate any correction for heat transfer between the thermostatic and calorimetric liquids. With the electric heater fed from a storage battery unit and with the buffer resistance switched on in advance, the current in the circuit and the voltage drop during the experiment remained constant. Consequently, the amount of conducted heat was calculated by the well-known formula:

$$Q = 0,86 \cdot IU \cdot$$

(2)

Card

2/6

ACCESSION NR: AT4038881

Six series of experiments were run to determine the heat conductance of synthetic benzine, kerosene and paraffin oil; the results are tabulated. Heat conductance as a function of temperature is shown in Figure 1 of the Enclosure for kerosene and in Figure 2 for paraffin oil. For synthetic kerosene and synthetic paraffin oil equations were derived, through the use of which heat conductance can be determined for any temperature in an interval from 0 to 100C. For synthetic kerosene

$$C_p = 0,479 + 0,0011 t \quad (3)$$

For synthetic paraffin oil

$$C_p = 0,47 + 0,0009 t \quad (4)$$

Orig. art. has: 2 tables, 4 figures and 4 formulas.

ASSOCIATION: Novocherkasskiy politekhnicheskiy institut (Novocherkassk Polytechnical Institute)

3/6

Card

ACCESSION NR: AT4038881

SUBMITTED: 00

DATE ACQ: 16Jun64

ENCL: 02

SUB CODE: OC, FP

NO REF SOV: 003

OTHER: 000

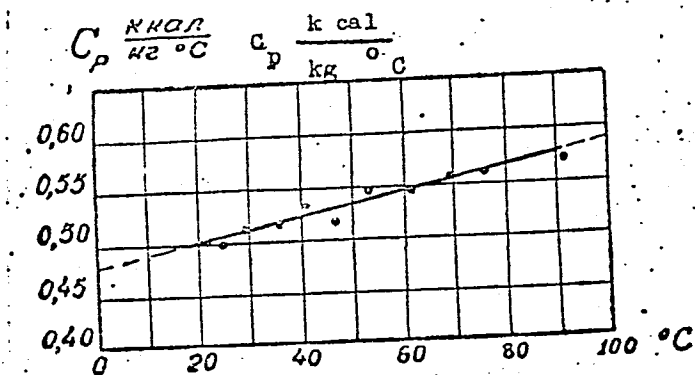
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ACCESSION NR: AT4038881

ENCLOSURE: 01

Figure 1



Card 5/6

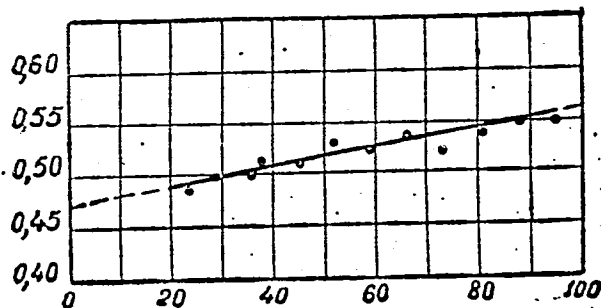
ACCESSION NR: AT4038881

ENCLOSURE: 02

Figure 2

$$C_p \frac{\text{Kcal}}{\text{kg } ^\circ\text{C}}$$

$$C_p \frac{\text{k cal}}{\text{kg } ^\circ\text{C}}$$



Card 6/6

26197
S/081/61/000/012/025/028
B103/B202

11.1210

AUTHOR: Reznichenko, Ye. P.

TITLE: Determination of the specific heat of synthetic gasoline, kerosene, and paraffin oil

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 12, 1961, 528, abstract 12M208. (Tr. Novocherk. politekhn. in-ta, 1960, 106, 37-42)

TEXT: The specific heat of synthetic gasoline, kerosene, and of paraffin oil was determined in a low-volume vacuum colorimeter. On the basis of the experimental data obtained the author graphically represented the temperature dependence of the specific heat for synthetic kerosene and synthetic paraffin oil. In this connection equations were derived from which the specific heat can be determined for each temperature in the range from 0 to 100°C. For synthetic kerosene the specific heat capacity C_p amounts to $0.479 + 0.0011 t$, for synthetic paraffin oil $C_p = 0.47 + 0.0009 t$. The spread of the experimental points for kerosene is $\leq 1.15\%$, for paraffin oil 1.01% . With increasing temperature, the specific heat increases. Since the specific heat

Card 1/2

Determination of the specific heat . . .

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B103/B202

of synthetic gasoline had been determined in a very narrow temperature range
the dependence could not be graphically represented. [Abstracter's note:
Complete translation.]

Card 2/2

REZNICHENKO, Ye.S., inzh.; TSIFRINOVICH, A.Z., inzh.; KHAVIN, B.N., red.
izd-va; TEMKINA, Ye.L., tekhn.red.; BOROVNEV, N.K., tekhn.red.

[Instructions on the fitting and welding of steel constructions
for blast furnace and gas purification plants] Instruktsiia po
sborke i svarke stal'nykh konstruksii domennykh tsekhov i gazo-
ochistok (VSN 18-59). Moskva, Gos.izd-vo lit-ry po stroit.,
arkhit. i stroit.materialam, 1960. 93 p. (MIRA 13:10)

1. Russia (1917- R.S.F.S.R.) Ministerstvo stroitel'stva.
(Blast furnaces--Design and construction)
(Structural frames--Welding)

SLUTSKIY, S.V., inzhener; LAYEVSKAYA, G.S., inzhener; TSIPENYUK, E.V.,
inzhener; REZNICHENKO, Ye.Ya., inzhener; BOGUSLAVSKIY, A.I.,
inzhener; ~~SKURATOVSKIY~~, Z.Sh., inzhener.

Manufacture of footwear with microporous soles made by hot
vulcanization under pressure. Leg. prom. 16 no.7:19-23 J1 '56.
(MLRA 9:10)

(Shoe industry) (Rubber, Synthetic)

SLUTSKIY, S.B.; LAYEVSKAYA, G.I.; REZNICHENKO, Ye.Ya., inzh.

Experimenting with NT nairit. Kozh.-obuv.prom. 2 no.4:26-27 Ap
'60. (MIRA 13:9)

1. Glavnyy inzhener Kiyevskoy fabriki No.1 (for Slutskiy).
2. Nachal'nik eksperimental'noy laboratorii reziny Kiyevskoy
fabriki No.1 (for Layevskaya).
(Rubber, Synthetic)

S/081/61/000/019/081/085
B103/3147

AUTHORS: Slutskiy, S. B., Layevskaya, G. I., Reznichenko, Ye. Ya.

TITLE: Experience with nairit HT (NT)

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 19, 1961, 520, abstract
19F295 (Kozhevenno-obuvn. prom-st', no. 4, 1960, 26-27)

TEXT: During the operation with chloroprene rubber polymerizing at low temperatures (nairit HT) (I) and perfectly substituting gutta percha, it was found that its technological properties were directly related with the index of plasticity. The plasticity according to Karrer was determined by changing the method of preparing the samples (mechanical mastication was replaced by thermo mastication thus giving standard samples with smooth surface). The index of plasticity of I is directly related to its hardness and its capacity of being rolled, as well as to its solubility, viscosity of solutions, and binding property. I with a plasticity ≥ 0.15 can be easily rolled. I with a plasticity of 0.20-0.35 gives glues with excellent binding properties at normal viscosity and concentration. When rolling I with a plasticity of 0.18-0.35, the time of

Card 1/2

Experience with nail it HT (HT)

S/081/61/000/019/081/085
B103/B147



mastication can be reduced from 50-60 to 20-25 min. There is no noticeable relationship between tensile strength of I and binding property of glue from it. [Abstracter's note: Complete translation.]

Card 2/2

REZNICHENKO, Yu. V., BELOUSOV, V. V., MAGNITSKIY, V. A., and KEYLIS-BOROK, V. I., AND
LYUBIMOVA, Ye. A.,

"Seismological Problems and Questions Concerning the Physical Structure of
the Earth's Deposits."

paper presented at the XIth General Assembly of the Int'l. Union of Geodesy and
Geophysics, Toronto, Canada, 3-14 Sept. 1957 (Izv. Ak Nauk SSSR - Ser. Geog. 1958,
No. 2, pp 3-8 [USSR]).

ACC NR: AP6010540

SOURCE CODE: UR/0387/66/000 05/0016/0032

AUTHOR: Reznichenko, Yu.V. (Member correspondent, AN SSSR)

ORG: None

TITLE: Computation of trembling of Earth's surface points from earthquakes in the surrounding area

SOURCE: AN SSSR. Izvestiya. Fizika Zemli, no. 5, 1966, 16-32

TOPIC TAGS: seismology, earthquake, earthquake occurrence frequency, earthquake intensity map

ABSTRACT: The author defines and considers the concept of B , - the average frequency of occurrence of earth's tremors of a definite "strength" or intensity, I , at a given point upon or under the Earth's surface, under the action of all earthquakes with foci in the surrounding regions. Thus B is the density of tremors distribution over the time and the tremor intensity I . The author coins for " B " the conceptual word of "tremblingness" or "tremness"; he considers this concepts of value in the engineering evaluation of seismic dangers for constructions on given land parcels. The paper was motivated by the need to close the gaps in the quantitative approaches to the description of regional seismic activities. The method of computing tremness uses information in form of 1) maps of seismic activity, A , with known depths of earthquake foci, 2) maps of maximum possible earthquake ratings K_{max} ($K = \lg E$, where E is the maximum seismic

Card 1/2

UDC: 550.340.1

ACC NR: AP6016546

energy of the earthquake focus, in joules, 3) Dependence of the earthquake intensity, I , upon distance to the quake focus, r . A general theory of this method has been presented by the author before (AN SSSR, Izvestiya. Fizika zemli, no. 11, 1965). This paper describes the actual process of tremness computation, using the above information sources. Results of computations are given for two points of the Sayano-Tuvinsk region based upon detailed observation of the Complex seismological expedition (KSE) of the Institute of Earth's Physics of the AN SSSR during 1963 - 1964. Maps of A ; K_{\max} ; and $I(r)$ are given for the region. The resultant computed tremness B for points S and Sh of the regional map is shown in Fig. 1.

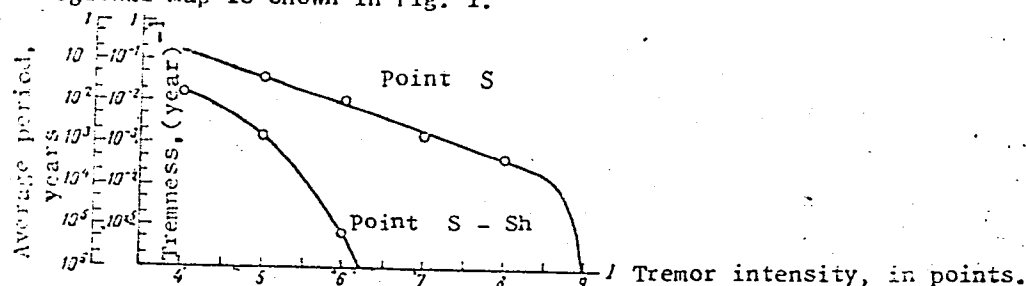


Fig. 1. Tremness B , in occurrences/year, as function of quake tremor intensity, I . Author thanks I.L. Nerserov and S.I. Mosarskiy for making available the results of KSE observations T.G.Rautian and I.V. Gorunova for aid. Orig. art. has 5 figures, 17 formulas and 3 tables.

SUB CODE: 08/

SUBM DATE: 01Oct65/

ORIG REF: 014/

OTH REF: 001

Card 2/2

REZNICKE, R.

Use of electric gauges for the measurement of strains in agricultural machinery.
p. 141. SBORNIK. RADA MECHANISACE A ELEKTRIFIKACE ZEMEDLSTAVI A LESNICTVI. Praha.
Vol. 28, no. 2/3, Sept. 1955.

SOURCE: East European Accessions List (EEAL), Library of Congress
Vol. 5, No. 7, July 1956.

REZNICKOVA, Eva

Determining the zinc and calcium content in oils with additives.
Ropa a uhlie 5 no.4:125-126 Ap '63.

1. Vitkovicke zelezarny Klementa Gottwalda, zavod 2, Ostrava -
Vitkovice.

REZANOV, A. I.

✓ **Thermal and Thermoelectric Properties of Ferromagnetic Metals.** A. I. Rezanov (*Doklady Akad. Nauk S.S.S.R.*, 1952, 82, [6], 885-887, in Russian). Using Vonsovsky's model of the interaction of outer and inner electrons (*J. Physics (U.S.S.R.)*, 1948, 10, 468; *M.A.*, 14, 362), which enabled V. to obtain a formula for the elect. conductivity of ferromagnetics near the Curie point, θ . R. has derived an analogous expression for the thermal conductivity: $\kappa = B[1 + \gamma_s(J_s + J_p)^2]$, where J_s and J_p are the spontaneous magnetization of the d - and s -electrons, resp., and the coeff. of proportionality $\gamma_s = [1/(1 + k_s)]k_s^2 + 4k_s(B'/B) + (B'/B)^2$, and the const. $k_s (=J_s/J_d)$ being 0.1-1. In this, $B = \frac{1}{2}I$, and $B' = -\delta + \frac{1}{2}I$, where I is the exchange integral of the interaction of s - and d -electrons of neighbouring atoms, and $1/b \propto$ effective mass of s -electrons moving in the field of lattice ions only. The thermo-e.m.f. of a pair of ferromagnetic conductors is, in the accepted symbols (cf. Bethe and Sommerfeld, "The Electron Theory of Metals," Leningrad and Moscow, 1938):

$$E = -(\pi^2 k^2 / 3e) \int_0^{\infty} \left\{ \frac{1 + \gamma_s(J_s + J_p)^2 \cdot \Lambda / \zeta_1}{1 + \gamma_s(J_s + J_p)^2 \cdot \Lambda / \zeta_2} \right\} T \cdot dT.$$

Here, $\Lambda = 1 + \frac{1}{2} \frac{d \ln l}{d \ln \theta}$, l being the mean free path, \bar{v} the mean

speed of the electron, and $\zeta = \frac{1}{2} m \bar{v}^2$ (where m is the mass of an electron), for electrons moving in the field of lattice ions only. On differentiation and use of the known relation $J_s + J_p = a\sqrt{\theta - T}$, this gives $-\frac{dE}{dT} = OT - \lambda T(\theta - T)$ in which the const. are $O = (\pi^2 k^2 / 3e) \cdot ((\Delta/\zeta)_1 - (\Delta/\zeta)_2)$, and $\lambda = (\pi^2 k^2 / 3e) \cdot a \cdot (\Lambda/\zeta)_1 \cdot (\gamma_s)_1$. Hence for the Thomson coeff. of a ferromagnetic (μ_s) we have

$$\mu_2 - \mu_1 = T \cdot \frac{d^2 E}{dT^2} = OT - \lambda T(\theta - 2T),$$

and for the Peltier heat

$$\Pi = T \frac{dE}{dT} = -CT^2 + \lambda T^3(\theta - T).$$

The formulae for κ , $-\frac{dE}{dT}$, and μ_2 agree qual. with the experimental data of Dorfman and Yanus (*Z. Physik*, 1929, 54, 277), and those of Hammer (*Ann. Physik*, 1939, [v], 8, 649). The temp. dependence of the ferromagnetic part of these quantities is thus determined principally by the square of the spontaneous magnetization, and hence the temp. coeff. must have sharp max. near θ .—G. V. E. T.

B7

Ural State U. in. Gorkiy

REZNICK, H.

Our experiences in the training of aircraft mechanics. p. 241.

Our glorious day. p. 240.

KRIDLA VLASTI, Prague, No. 11, May 1955.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 5, No. 6 June 1956, Uncl.

REZANOV, A. I.

5

Theory of electrical conductivity of ferromagnetic metals at low temperatures. A. I. Rezanov (A. M. Gorkii, Ural State Univ.). *Dokl. Akad. Nauk S.S.R.* 92, 936-7 (1953) (Engl. translation issued as U.S. Atomic Energy Comm. NSF-tr-209, 3 pp. (1954)).—The transfer of energy from the outer 4s electrons to the inner 3d electrons, involving the mutual exchange interaction, leads to an addnl. elec. resistivity. This effect is compared with the normal resistivity connected with the increase of lattice vibrations. From the Dirac formula (*Foundations of Quantum Theory*, 1937, sect. 61) for the exchange interaction for s and d electrons and the kinetic equation of Wilson (*The Quantum Theory of Metals*, 1941) a formula for the elec. cond. is derived. $\sigma_{fn} \approx (16\pi n V_0^2 h^2 / a n^2) (T_0 / T) (\xi_0 \xi_0 / F_0)$, where V_0 = vol. of the unit cell; n = no. of electrons/cc.; ξ_0 and ξ_0 are momentum and energy of the degenerated electron gas; F_0 = elec. field strength; a = at. distance; T_0 = exchange integral. The Curie temp. θ_0 is substituted for the Debye temp. θ_D appearing in the formula for the normal resistivity. The quotient $\rho_{fn} / \rho_{n0} \approx 10^4 (T_0 / C) (1/T^2)$, where C = av. energy of the electrons in the periodic lattice field $\approx 10^{-12}$ erg, indicates that at extremely low temps. the ferromagnetic resistivity component ρ_{fn} accounts for the greater part of the total resistivity of iron. At 1°K. ρ_{fn} drops to 10% of the normal resistivity.

H. B. Sachse



B. T. R.
Vol. 3 No. 4
Apr. 1954
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②
5347* Heat Conductivity of Ferromagnetic Metals at Low Temperatures. (Russian.) A. I. Rezanov and V. I. Cherenkov. Doklady Akademii Nauk SSSR, v. 93, no. 4, Dec. 1, 1953, p. 641-644.

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Tech of automatic welding was developed by Inst of Elec Welding imeni Acad Paton, Acad Sci USSR, and used for welding vertical and horizontal joints in shell of 1,000-cu-m blast furnace. As a rule, transverse contraction of joints is lower than in case of manual welding and decreases with increase in thickness of plates to be welded.

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10957* Penetration of High Polymer Solutions Into Rubber and Leather. Proniknovenie rastvorov vysokopolimerov v rezinu i kozhu. (Russian.) G. A. Biokh, S. B. Kalika, G. I. Laevskala, E. Ia. Reznichenko, and E. V. Tsipeniuk. Legkaya Promyshlennost', v. 15, no. 4, Apr. 1955, p. 40-42.

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Workers of the Krasnyi Aksai Plant take part in inspection.
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